AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims

1. (currently amended) A method of modifying a biologically active target molecule comprising contacting said target molecule with a catalytic antibody capable of chemically modifying said target molecule said contacting being effected under conditions sufficient for said catalytic antibody to modify said target molecule by attaching a label to said target molecule,

wherein said target molecule is selected from the group consisting of a protein, peptide, nucleic acid, carbohydrate, cell, subcellular particle, virus, steroid~~,~~ and lipid; and

wherein attaching of said label to said target molecule (a) modulates an activity of said target molecule; (b) deactivates said target molecule; or (c) targets said target molecule for degradation or clearance.

2. (previously presented) The method of claim 1, wherein said catalytic antibody accelerates a detectable base-line rate of reaction between said target and said label.

3. (original) The method of claim 1 wherein said target molecule is a protein associated with a disease condition.

4. (canceled)

5. (canceled)

6. (previously presented) The method of claim 1, wherein said label is a β-lactam antibiotic.

7. (withdrawn) The method of claim 1 wherein said catalytic antibody modifies said target molecule by a method selected from the group consisting of acylation, glycosylation, esterification, and transamidation.

8. (withdrawn) The method of claim 7 wherein said catalytic antibody modifies said target molecule by acylation with at least one β-lactam antibiotic.

9. (withdrawn) The method of claim 8 wherein said antibiotic is selected from the group consisting of cefoxitin and cefotaxime.

10. (previously presented) The method of claim 1 wherein said target molecule is selected from the group consisting of TNFα, IL-4, IL-6, and VEGFr2.

11. (previously presented) The method of claim 1 wherein said catalytic antibody is isolated from a library of antibodies or fragments thereof by one or more methods selected from the group consisting of phage display, in vivo selection, and high throughput screening.

12. (original) The method of claim 11 wherein said library is generated by immunizing an animal with a hapten resembling a combining site of said target molecule, alone or in combination with an agent used to chemically modify said target molecule at said combining site.

13. (original) The method of claim 11 wherein *in vivo* selection comprises:

(a) subjecting a bacteria in a growth medium to conditions sufficient for said bacteria to express and secrete putative antibodies;

(b) adding said target molecule to said growth medium and/or subjecting said bacteria to conditions sufficient for said bacteria to co-express and secrete said target molecule with said putative antibodies;

(c) adding a toxic concentration of at least one β-lactam antibiotic to said growth medium;

(d) identifying one or more bacterial colonies that survived step (c); and

(e) isolating a catalytic antibody from said colonies identified in step (d).

14. (previously presented) The method of claim 13 further comprising after step (b), but prior to step (c) a step of selecting by phage display putative antibodies having an affinity for an antibiotic-target molecule adduct.

15. (currently amended) The method of claim 13 wherein said ~~one or more~~ at least one β-lactam antibiotics ~~are~~ is cefoxitin ~~and~~ or cefotaxime, and the toxic concentrations of said antibiotics are 30 μM-50 μM cefoxitin and 0.20 μM-0.60 μM cefotaxime.

16. (original) The method of claim 13 wherein said catalytic antibody catalyzes at least 220-555 turnovers with cefoxitin or 11.2-33.6 turnovers with cefotaxime.

17. (currently amended) A non-naturally occurring enzyme capable of chemically modifying a biologically active target molecule by attaching a label to said target molecule,

wherein said target molecule is selected from the group consisting of a protein, peptide, nucleic acid, carbohydrate, cell, subcellular particle, virus, steroid~~,~~ and lipid; and

wherein attaching of said label to said target molecule is capable of (a) modulating an activity of said target molecule; (b) deactivating said target molecule; or (c) targeting said target molecule for degradation or clearance.

18. (currently amended) The enzyme of claim 17, wherein said enzyme is generated by directed evolution of a wild-type enzyme with a different activity.

19. (previously presented) The enzyme of claim 18 wherein said target molecule is a protein associated with a disease condition.

20. (previously presented) The enzyme of claim 17, wherein said enzyme accelerates a detectable base-line rate of reaction between said target and said label.

21. (canceled)

22. (canceled)

23. (previously presented) The enzyme of claim 17, wherein said label is a β-lactam antibiotic.

24. (canceled)

25. (canceled)

26. (previously presented) The enzyme of claim 18 wherein said catalytic antibody chemically modifies and thereby deactivates a target molecule selected from the group consisting of TNFα, IL-4, IL-6 and VEGFr2.

27. (currently amended) A composition comprising a catalytic antibody capable of chemically modifying a biologically active target molecule by attaching a label to said target molecule and a pharmaceutically acceptable carrier or diluent,

wherein said target molecule is selected from the group consisting of a protein, peptide, nucleic acid, carbohydrate, cell, subcellular particle, virus, steroid~~,~~ and lipid; and

wherein attaching of said label to said target molecule is capable of (a) modulating an activity of said target molecule; (b) deactivating said target molecule; or (c) targeting said target molecule for degradation or clearance.

28. (previously presented) The composition of claim 27, wherein said label is a β-lactam antibiotic.

29. (original) The composition of claim 27 wherein said target molecule is a protein associated with a disease condition.

30. (canceled)

31. (canceled)

32. (previously presented) The composition of claim 27, wherein said catalytic antibody accelerates a detectable base-line rate of reaction between said target and said label.

33. (withdrawn) The method of claim 27 wherein said catalytic antibody modifies said target molecule by a method selected from the group consisting of acylation, glycosylation, esterification, and transamidation.

34. (withdrawn) A method of treating a disease condition associated with TNFα in a patient in need of said treatment comprising administering to said patient an amount of a catalytic antibody effective to chemically modify and thereby deactivate TNFα.

35. (withdrawn) The method of claim 34 wherein said disease condition is selected from the group consisting of rheumatoid arthritis, Crohn's disease, inflammation, septic shock, cachexia, cancer, parasitic infections, allograft rejections, and heart disease.

36. (withdrawn) A method of treating a disease condition associated with VEGF in a patient in need of said treatment comprising administering to said patient an amount of a catalytic antibody effective to chemically modify and thereby deactivate VEGF.

37. (withdrawn) The method of claim 36 wherein said disease condition is selected from the group consisting of rheumatoid arthritis, colorectal cancer, and metastatic renal cell cancer.

38. (withdrawn) A method of treating a disease condition associated with IL-4 in a patient in need of said treatment comprising administering to said patient an amount of a catalytic antibody effective to chemically modify and thereby deactivate IL-4.

39. (withdrawn) The method of claim 38 wherein said disease condition is an allergic inflammation associated with allergic asthma, rhinitis, conjunctivitis, and dermatitis.

40. (withdrawn) A method of treating a disease condition associated with IL-6 in a patient in need of said treatment comprising administering to said patient an amount of a catalytic antibody effective to chemically modify and thereby deactivate IL-6.

41. (withdrawn) The method of claim 40 wherein said disease condition is selected from the group consisting of inflammation, multiple myeloma, renal cell carcinoma, Kaposi's sarcoma, rheumatoid arthritis, Castleman's disease, and acquired immunodeficiency syndrome.

42. (withdrawn) A method of modifying a biologically active target molecule comprising contacting said target molecule with a catalytic antibody and a label, wherein said catalytic antibody chemically modifies said target molecule by attaching said label.

43. (withdrawn) The method of claim 42 wherein said label is a detectable label.

44. (withdrawn) The method of claim 42, wherein the attachment of said label disrupts the biological activity of said target molecule.

45. (withdrawn) The method of claim 42, wherein said label is a beta-lactam antibiotic and said catalytic antibody catalyzes the acylation of said target molecule by said beta-lactam.